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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/788,331 | 02/16/2001 | Peter C. Sercel | ALG07NP | 6109 |

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| EXAMINER |
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LEE, JOHN D

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| ART UNIT | PAPER NUMBER |
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2874

DATE MAILED: 07/30/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/788,331

Applicant(s)

SERCEL ET AL.

Examiner

JOHN D. LEE

Art Unit

2874

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on _____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-58 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 8-10, 12-14, 27-34, 36-47, 50, 52-54 is/are allowed.
- 6) ☒ Claim(s) 1-4, 11, 15-26, 35, 48, 49, 51, 55-58 is/are rejected.
- 7) ☒ Claim(s) 5-7 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02-16-2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 7.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e) based upon provisional applications 60/183,499, filed on February 17, 2000, and 60/226,147, filed on August 18, 2000.

The seventeen (17) sheets of formal drawing filed with this application on February 16, 2001, are acceptable.

The abstract of the disclosure is objected to because it is too long. The Rules of Practice currently limit the abstract to a maximum of 150 words. Correction is required. See MPEP § 608.01(b).

The disclosure is objected to because of the following informalities: on page 3, the serial numbers and filing dates of the referenced copending applications must be provided; on page 12, there is no brief description for figures 9C and 9D; and on page 13 (line 22), "Figure 22 shows" should be changed to "Figures 22A and 22B show". Appropriate correction is required. Applicant's cooperation is requested in correcting any other errors of which applicant may become aware in the specification.

Claim 58 is objected to because of the following minor informality: in line 3, the word "of" should be inserted between "degree" and "optical". Appropriate correction is required.

The following is a quotation of the second paragraph of 35 U.S.C. § 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 15, 35, 48, and 49 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claim 15, line 1, the phrase "wherein at least one of the fiber optic resonators includes" is not understood since only a single

fiber optic resonator was previously defined. The claim is thus indefinite. In line 11 of claim 35, there is not clear antecedent support for the term “the fiber ring”, thus rendering the claim indefinite. It is believed that the intended term is “the fiber-ring optical resonator segment”. In the last line of each of claims 48 and 49, there is no antecedent support for the term “the optical WDM system”, thus rendering the claims indefinite. This problem could be alleviated by changing “the” to “an” in the indicated term.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 55-58 are rejected under 35 U.S.C. § 102(b) as being clearly anticipated by U.S. Patent 6,009,115 to Ho. In Figure 9 and in the paragraph bridging columns 9 and 10, Ho discloses methods of altering an optical resonance frequency of a fiber-ring optical resonator which include the techniques set forth in these claims.

The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4, 11, 16-26, and 51 are rejected under 35 U.S.C. § 103(a) as being unpatentable over any of the articles by Kuwata-Gonokami et al (Optics Letters – October 1995), Frolov et al (Applied Physics Letters – April 1998), and Frolov et al (Applied Physics Letters – June 1998). These three (3) articles were all submitted by applicant in the Information Disclosure Statement received on October 10, 2002, and all

three disclose a fiber-ring optical resonator comprising an optical fiber and a transverse fiber-ring resonator segment integral with the fiber, the segment having a circumferential optical path length which is different from the circumferential optical path length of the optical fiber adjacent to the resonator segment so that the resonator segment may support a substantially circumferential resonant optical mode (a “whispering gallery” mode) near an outer surface of the optical fiber segment. The essential difference between the device of these articles and that of the specified claims is that none of the articles specify that the optical fiber is a resonator fiber, i.e. that resonance occurs within the fiber. The generation of the whispering gallery modes and the fact that the optical fibers are fiber lasers or amplifiers, however, are clear implications that the optical fibers are resonator fibers in each of the three (3) references. To have the fibers specifically be resonator fibers would thus have been obvious to a person of ordinary skill in the art. It appears that the transverse fiber-ring resonator segment integral with the fiber in each of the three (3) references is formed by depositing material onto the optical fiber. The formation of the segment by other related processes, however, such as cylindrical processing of the fiber or removal of material from the fiber, would have been obvious to the person of ordinary skill.

Claims 8-10, 12-14, 27-34, 36-47, 50, and 52-54 are allowed.

Claims 5-7 are objected to as defining allowable subject matter and would be allowed if rewritten to include the subject matter of the base claim from which they depend as well as the subject matter of all intervening claims.

Claims 15, 35, 48, and 49 would be allowed if rewritten to overcome the 35 U.S.C. § 112, second paragraph, rejection set forth above.

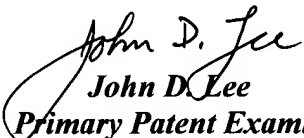
The following is a statement of reasons for the allowability of the above-identified claims. The prior art (specifically the articles by Kuwata-Gonokami et al (Optics Letters – October 1995), Frolov et al (Applied Physics Letters – April 1998), and Frolov et al (Applied Physics Letters – June 1998) fails to disclose or suggest a fiber-ring optical resonator comprising an optical fiber and a transverse fiber-ring resonator segment integral with the fiber, along with an additional evanescently-coupled optical element or along with a delocalized-optical-mode suppressor or along with a modulator for modulating a coupling condition between an optical waveguide and the fiber-ring resonator or along with any of the other claimed mechanical arrangements (e.g. a taper-positioning-and-support structure).

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Other fiber-ring optical resonators which are germane to the resonator of the instant application can be seen in the cited U.S. Patents to Marcatili; Hicks, Jr.; Malvern; Sasayama et al; Joannopoulos et al; and Little et al; and in the Journal Of Lightwave Technology article by Little et al. Other United States Patents and Patent Application Publications of applicant's related applications include Sercel et al '132; Sercel et al '730; Vahala et al '739; Painter et al '055; and Vahala et al '851.

All of the prior art documents submitted by applicant in the Information Disclosure Statement filed on October 10, 2002, have been considered and made of record. Note the attached initialed copy of form PTO-1449. Although all documents have been considered by the Examiner, the lined-through citations are not "prior art" with respect to the general public and therefore should not be printed on any patent which may issue from the instant application.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. § 103(a), the Examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR § 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the Examiner to consider the applicability of 35 U.S.C. § 103(c) and potential 35 U.S.C. §§ 102(e), (f) or (g) prior art under 35 U.S.C. § 103(a).

Any inquiry concerning the merits of this communication should be directed to Examiner John D. Lee at telephone number (703) 308-4886. The Examiner's normal work schedule is Tuesday through Friday, 6:30 AM to 5:00 PM. Any inquiry of a general or clerical nature (i.e. a request for a missing form or paper, etc.) should be directed to the Technology Center 2800 receptionist at telephone number (703) 308-0956, to the technical support staff supervisor (Team 2) at telephone number (703) 308-3072, or to the Technology Center 2800 Customer Service Office at telephone number (703) 306-3329.


John D. Lee
Primary Patent Examiner
Group Art Unit 2874